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Barriers to Widespread Deployment of CO₂ Capture in the Electric Power Sector

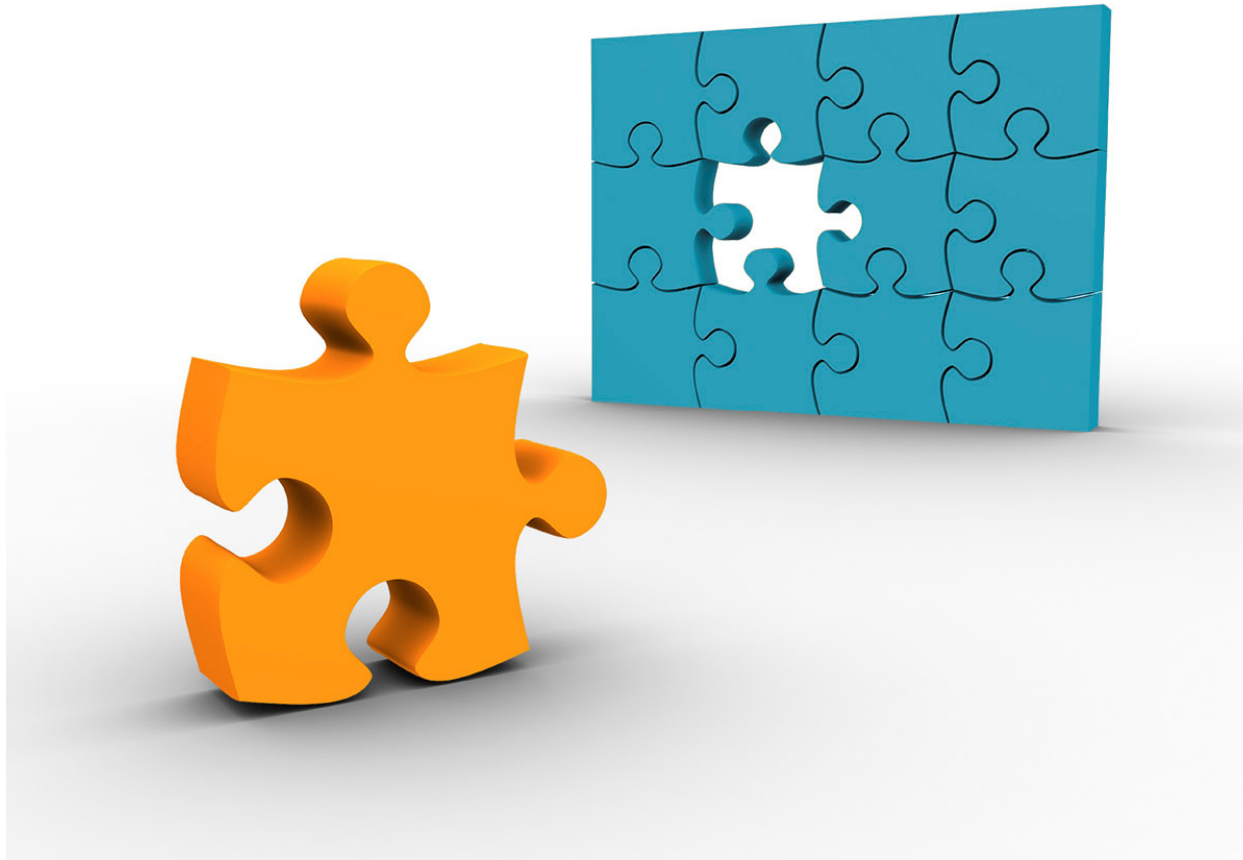
Dr. Jeffrey N. Phillips
Senior Program Manager

**Interagency Task Force on Carbon
Capture and Storage Public Meeting**
May 6, 2010



EPRI is grateful for this opportunity to share our thoughts on this topic

CCS is One Piece of the Puzzle



We will need the other pieces as well to decrease CO₂ emissions by 80%

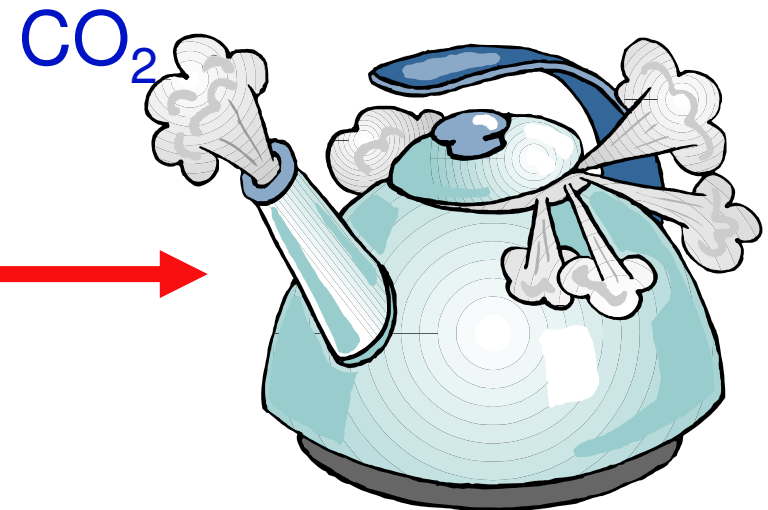
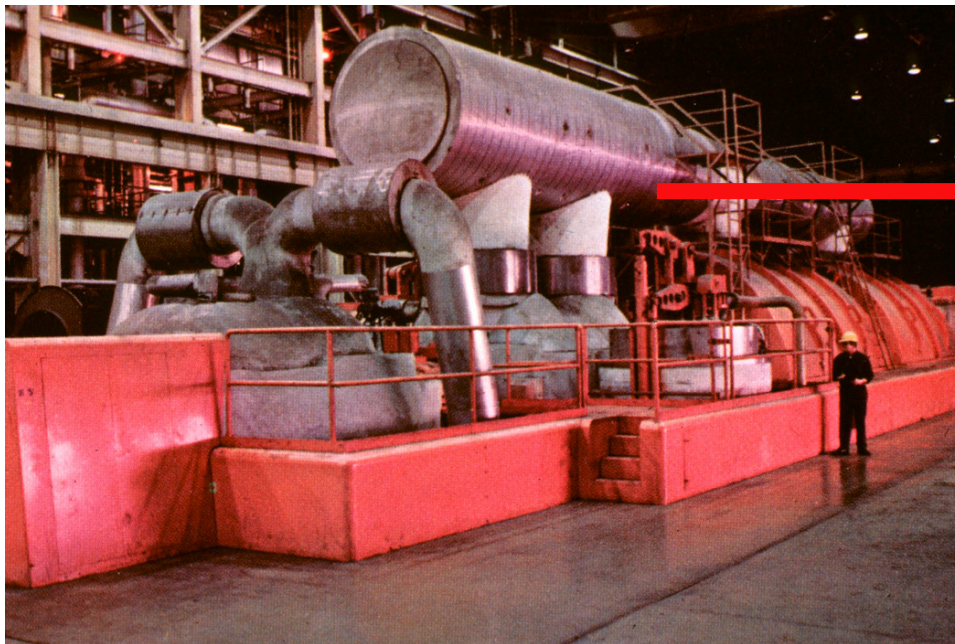
General Message

- **No obvious insurmountable technical barriers** to CO₂ capture
- **Lots of potential challenges**
 - Won't know how much of a barrier they pose until we address them at full scale
- **Cost is a major barrier to widespread deployment**
 - Developing countries can't be expected to implement this technology at current costs
 - U.S. government's available resources will limit the number of projects that can be subsidized
- **Additional R&D is the path** to lower cost technology



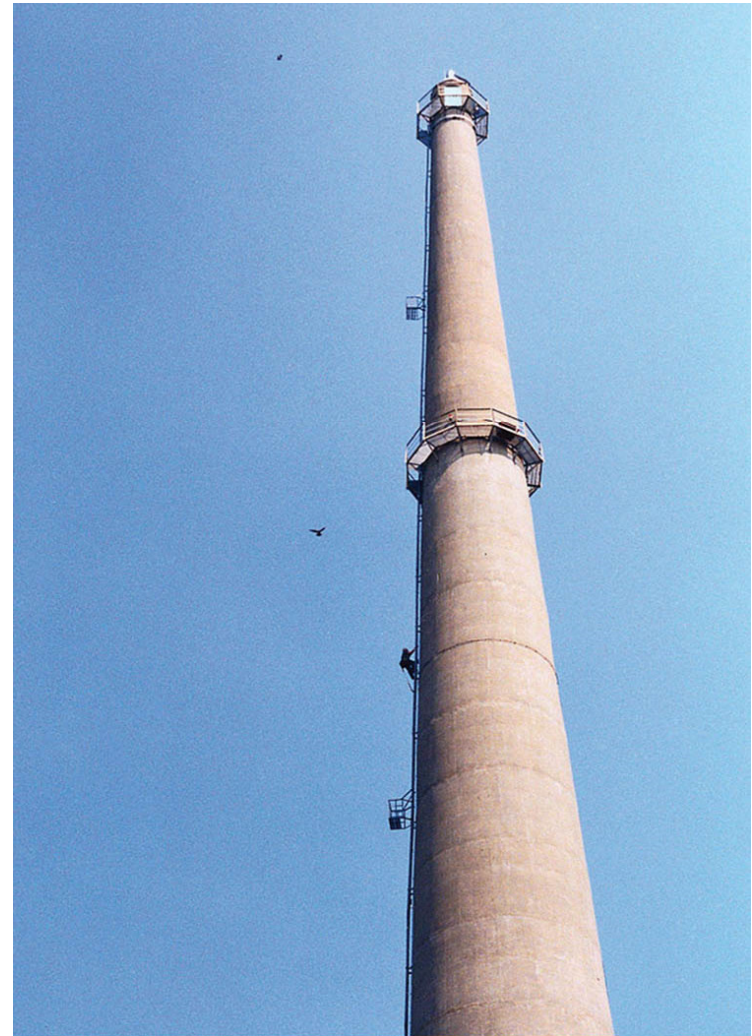
Full-scale Integration Needs to be Tested

Post-Combustion Capture: Up to half of the steam flowing through the steam turbine will have to be diverted to the solvent regenerator to release the captured CO₂



Environmental Impacts of Capture Systems

Experience has shown that you will only be able to determine the full impact from **full-scale tests**



CO₂ Purity Requirements Not Yet Defined

- Need to know what **purity will be compatible** in pipelines
- Also, **ability to vent CO₂** during peak power demand and pipeline or storage outages needs to be ensured



Magnitude of the Effort is Large

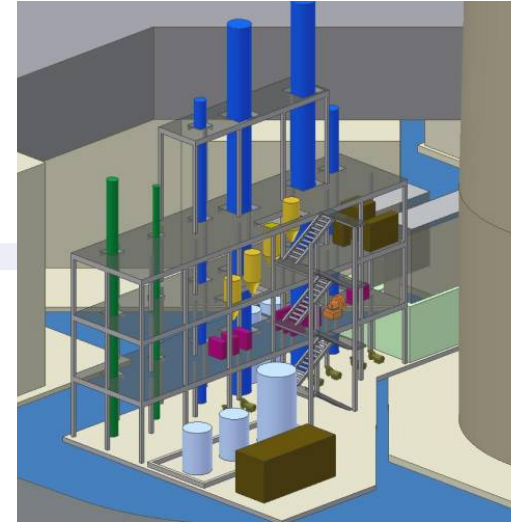
- Will the resources to carry out all this work be available?
 - Qualified construction workers
 - Engineers
 - Permitting agencies
 - Equipment suppliers



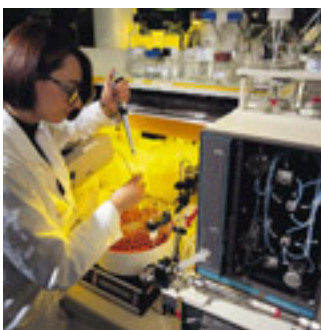
Six Integrated CCS Demos Enough?

Why not?

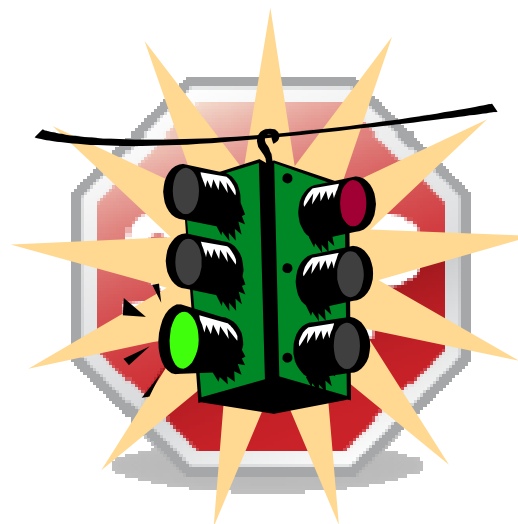
- **Not certain** all six will move forward
- None of the projects will demonstrate post-combustion capture **at full scale**
- None of the projects will demonstrate **higher firing temperature gas turbines** – critical for lower costs
- None of the projects will demonstrate **oxy-combustion**
- Some newer capture technologies **are not yet ready** for large demonstrations but offer lower costs



Final Point



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Together...Shaping the Future of Electricity